

REMARKS

Claims 1-9 and 24-27 remain pending in the captioned case. Further examination and reconsideration of the presently claimed application are respectfully requested.

Section 112 Rejections

Claims 1-9 and 24-27 were rejected under 35 U.S.C. § 112, second paragraph, for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In particular, claims 1-9 and 24-27 were rejected for not claiming the exact length of the apparatus or the exact wavelength of the transmitted signal (Office Action, pp. 2, 4). This rejection is traversed for at least the reasons set forth below.

Claim 1 states in part “wherein by the steps of extracting and folding, the apparatus is formed having a length substantially equal to one-half of the transmitted signal wavelength.”

As noted on page 2 of the Office Action, the Examiner considers claim 1 to be indefinite because the exact length of the apparatus and the transmitted signal wavelength are unknown. In particular, the Examiner states “[c]laims 1-9 and 24-27 are directed to a method for forming an apparatus, therefore the length of the apparatus must be known or predetermined prior to forming the apparatus; however, the apparatus cannot be formed (claims are vague and indefinite) because a carrier frequency of a signal transmitted is unknown therefore the wavelength (c/f) of the transmitted signal is unknown, thus the length of the apparatus is unknown” (final Office Action, page 2). Although the Applicants agree on some points, the Applicants disagree with the Examiner’s conclusion and the rejection of indefiniteness.

The Applicants agree that, in order to form an apparatus, the length of the apparatus must be known or predetermined prior to forming the apparatus. However, Applicants disagree that the exact length of the apparatus or the exact wavelength of the transmitted signal must be recited in the claim to render the claim definite. As set forth in MPEP 2173.02, the examiner’s focus during examination of claims for compliance with the requirement for definiteness of 35 U.S.C. § 112, second paragraph,

second paragraph, is whether the claim meets the threshold requirements of clarity and precision, not whether more suitable language or modes of expression are available. The essential inquiry pertaining to this requirement is whether the claims set out and circumscribe a particular subject matter with a reasonable degree of clarity and particularity.

In the office action response filed April 18, 2007, Applicants argued the definiteness of claim 1 by explaining how the subject matter recited in claim 1 was defined with a reasonable degree of clarity and particularity. For example, Applicants noted that although the apparatus length is dependent on the transmitted signal wavelength, the apparatus length is not limited to a particular transmitted signal wavelength. The specification provides one possible apparatus length (e.g., about 62mm) for an example transmitted signal wavelength (e.g., a 2.4Ghz signal) (Specification -- page 33, lines 10-26; page 35, line 28 – page 36, line 21). However, the specification clearly states that the length of the apparatus is not limited to a particular transmitted signal wavelength, and may be tailored to accommodate substantially any wavelength range (Specification -- page 17, lines 16-28; page 36, lines 23-29).

The presently claimed apparatus length is definite because it is defined in the claims with a reasonable degree of particularity and clarity. Although the transmitted signal wavelength must be known or predetermined prior to forming the apparatus, a particular transmitted signal wavelength does not have to be recited in the present claim to meet the requirements of clarity and precision. The present claim provides a reasonable degree of particularity and clarity by noting that the apparatus length is dependent on the transmitted signal wavelength. This dependence would allow one skilled in the art to form an apparatus, using the method steps recited in claim 1, by tailoring the apparatus length to a desired wavelength range. The wavelength of the transmitted signal would be known beforehand, thus allowing the apparatus to be formed having an appropriate length. However, restricting the claims to an exact apparatus length or an exact transmitted signal wavelength would unduly limit the scope of the claims.

Accordingly, Applicants contend that the § 112, second paragraph, rejection of claims 1-9 and 25-28 cannot be upheld and request that this rejection be removed.

Section 102 Rejections

Claims 1-9, 24, and 26-27 was rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 6,411,261 to Lilly (hereinafter “Lilly”). The standard for “anticipation” is one of fairly strict identity. A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art of reference. *Verdegaal Bros. v. Union Oil Co. of California*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987); MPEP 2131. Furthermore, anticipation requires the presence in a single prior art reference disclosure of each and every element of the claimed invention, as arranged in the claim. *W.L. Gore & Assocs. V. Garlock*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983). Using these standards, Applicants submit the cited art fails to disclose each and every element of the currently pending claims, some distinctive features of which are set forth in more detail below.

Lily fails to anticipate a method for forming an apparatus in which a length of the apparatus is substantially equal to one-half of a signal transmission wavelength. Present claim 1 recites in part:

A method for forming an apparatus configured to reduce electromagnetic interference between a pair of antennas coupled to a wireless communication device, wherein the method comprises: extracting a shape of the apparatus ... folding the shape into a plurality of resonant circuit elements, each configured to resonate at or near a carrier frequency of a signal transmitted by one of the pair of antennas; and wherein by the steps of extracting and folding, the apparatus is formed having a length substantially equal to one-half of the transmitted signal wavelength.

The present invention provides a method for forming an apparatus, which is configured to reduce the amount of electromagnetic interference between two or more antennas coupled to a wireless communication device (Specification -- Fig. 6 and supporting text). In the presently claimed embodiment, the apparatus is formed by extracting a shape of the apparatus from a thin sheet of conductive material, and folding the shape into a plurality of resonant circuit elements. Although the resonant circuit elements may be formed somewhat differently in various embodiments of the invention (Specification -- Figs. 7, 10, and 11, and supporting text), each of the resonant circuit elements is configured to resonate at (or near) a carrier frequency of a signal transmitted by one of the

the antennas. In order to provide maximum interference reduction, the presently claimed method forms the apparatus, such that a length of the apparatus is substantially equal to one-half of the transmitted signal wavelength. “In doing so, about half of the radiated energy will be scattered in one direction, while the other half is scattered in a substantially opposite direction. This provides maximum interference reduction by canceling most, if not all, of the radiated components from the incoming electromagnetic wave” (Specification -- page 33, lines 19-26).

Lilly discloses a method for manufacturing an artificial magnetic conductor (AMC). As noted in the office action response filed April 18, 2007, Lily is completely silent about the length of the subsequently formed AMC. In addition, Lily fails to provide teaching, suggestion or motivation for maximizing interference reduction between a pair of antennas. More specifically, Lily fails to mention the possibility or desirability for maximizing interference reduction by providing an apparatus, which is capable of scattering approximately half of the radiated energy in one direction, while the other half is scattered in a substantially opposite direction. Therefore, Lily cannot be relied upon to anticipate an apparatus, whose length is uniquely configured for scattering radiated energy in such a manner. In other words, Lily fails to anticipate a method for forming an apparatus in which a length of the apparatus is substantially equal to one-half of a signal transmission wavelength, as recited in present claim 1.

On pages 3-4 of the Office Action Mailed January 18, 2007, the Examiner suggested that Lilly provides teaching for the claimed apparatus length by disclosing that the height of the apparatus is about 0.005λ to about 0.05λ (in column 4, lines 45-47) and showing that the length (x) of the apparatus is about 14 times the height (y) of the apparatus (in an attachment provided along with the Office Action of a marked-up Fig. 10). The Examiner obtained the 14x kicker by physically measuring the length ($x \approx 70\text{mm}$) and height ($y \approx 5\text{mm}$) of the apparatus shown in the attachment. The Examiner used these measurements to obtain an alleged length of about 0.07λ to 0.7λ for Lilly's apparatus, and to argue that such length could be used to anticipate the presently claimed length of about 0.5λ .

The Applicants disproved the Examiner's logic in the response filed April 18, 2007. For example, the Applicants conceded that drawings and pictures can anticipate claims if they clearly show the structure which is claimed. *In re Mraz*, 455 F.2d 1069, 173 USPQ 25 (CCPA 1972); MPEP 2125. However, when the reference does not disclose that the drawings are to scale and is silent as to dimensions, arguments based on measurement of the drawing features are of little value. *See Hockerson-Halberstadt, Inc. v. Avia Group Int'l*, 222 F.3d 951, 956, 55 USPQ2d 1487, 1491 (Fed. Cir. 2000). Furthermore, MPEP 2125 states that "it is well established that patent drawings do not define the precise proportions of the elements and may not be relied on to show particular sizes if the specification is completely silent on the issue." (emphasis added). Because Lilly is completely silent about the length of the subsequently formed AMC (i.e., the alleged "apparatus") and specifically states that the "components in the figures are not necessarily to scale" (Lilly -- col. 2, lines 54-55), the proportions of the elements shown, e.g., in Fig. 10 of Lilly cannot be relied on to show a particular apparatus length. The Applicants concluded that the Examiner's logic was flawed and improper and requested that the 102 rejection be removed.

The Examiner was unconvinced by the arguments provided in the previous response. In the final Office Action, the Examiner supports the previous 102 rejection by suggesting that the transmission wavelength demonstrated in the marked-up attachment of Fig. 10 "appears to be reasonable and satisfactory" (Office Action, page 4). The Applicants disagree.

The issue is not whether the Examiner considers his calculation of a transmission signal wavelength to be "reasonable and satisfactory," but whether the teachings of Lilly support such a wavelength. As noted above, Lilly is completely silent about the length of the AMC (the alleged "apparatus"). In addition, Lily fails to provide teaching, suggestion or motivation for maximizing interference reduction between a pair of antennas by forming an apparatus, whose length is substantially equal to one-half of a wavelength transmitted by one of the antennas. Furthermore, Lilly specifically states that the "components in the figures are not necessarily to scale" (Lilly -- col. 2, lines 54-55). Even though the Examiner may consider his calculation of transmission wavelength to be "reasonable and satisfactory," the calculation cannot be relied upon to anticipate the limitations of the claim because: (i) the calculation is based on features which are not drawn to scale and (ii) the calculated wavelength is not disclosed in or supported by the teachings of Lilly.

Accordingly, Applicants contend that the § 102 rejection of claims 1-9, 24 and 26-27 cannot be upheld and request that this rejection be removed.

Section 103 Rejections

Claims 1-9 and 24-27 were further rejected under 35 U.S.C. §103(a) as being unpatentable over Lilly. To establish a case of *prima facie* obviousness of a claimed invention, all of the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (C.C.P.A 1974), MPEP 2143.03. Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed.Cir. 1988); *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992), MPEP 2143.01. Using these standards, Applicants contend that the cited art fails to teach or suggest all features of the currently pending claims, some distinctive features of which are set forth in more detail below.

Lily fails to provide teaching, suggestion or motivation for a method of forming an apparatus in which a length of the apparatus is substantially equal to one-half of a signal transmission wavelength. As noted above, Lilly fails to provide teaching or suggestion for the length of the disclosed AMC structure (i.e., the alleged “apparatus”). In addition, Lilly lacks the necessary motivation that would enable one skilled in the art to modify the teachings of Lilly to produce an apparatus, whose length is substantially equal to one-half of a signal transmission wavelength. As such, Lilly cannot be relied upon to provide teaching, suggestion or motivation for all limitations recited in present claim 1.

On page 6 of the Office Action mailed January 18, 2007, the Examiner stated “[r]egarding claim 1, if [Applicants] argue that Lilly does not teach the apparatus is formed having a length substantially equal to one-half of the transmitted signal wavelength then it would have been obvious to one having ordinary skill in the art at the time the invention was made to form the apparatus [as claimed] ... [since] it has been held that where the general condition of a claim [is] disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233” (Office Action, page 6). In particular, the Examiner

Examiner argued that Lilly discloses the “general condition of the claim” by disclosing a range of “about 0.07λ to 0.7λ which includes the claimed one-half of the signal transmission wavelength of the present application” (Office Action Mailed January 18, 2007 -- page 7).

The Applicants traversed the Examiner’s argument in the response filed April 18, 2007. For example, Applicants argued that Lilly fails to disclose the “general condition of the claim,” and more specifically, fails to disclose a range of “about 0.07λ to 0.7λ .” As noted above, the Examiner’s arguments are improperly based on physical measurements of the drawing features shown in the attachment of Fig. 10, which the Examiner provided along with the previous Office Action in support of the alleged teaching. However, arguments based on measurement of drawing features are of little value when the reference does not disclose that the drawings are to scale and is silent as to dimensions. MPEP 2125. Since Lilly is silent about the length of the apparatus and specifically states that the “components in the figures are not necessarily to scale” (Lilly -- col. 2, lines 54-55), the alleged range of “about 0.07λ to 0.7λ ” cannot be used to disclose the “general condition of the claim.” Since the “general condition of the claim” is NOT disclosed in the cited art, discovering the optimum or workable range would involve more than routine skill in the art. This prevents the claimed apparatus length from being rendered obvious by Lilly.

The Examiner maintains the previous 103 rejections in the final Office Action because of statements made by the Applicant in the response filed April 18, 2007. For example, the Examiner points to a statement made on page 4 of the previous response in which Applicants state, “the claimed apparatus may be optimized by setting the length equal to approximately one-half of the signal transmission wavelength in a preferred embodiment of the invention” (final Office Action, pages 4-5). The Examiner also notes that the claim language does not recite an exact apparatus length. The Examiner somehow uses these statements to render the limitations of claim 1 obvious. The Applicants disagree.

Although Applicants statement on page 4 of the previous response suggests that the apparatus length may not always be equal to one-half of the signal transmission wavelength (by suggesting that the apparatus may be optimized by setting the length equal to one-half of the

signal transmission wavelength in a preferred embodiment of the invention), the Applicants statement does not override the fact that the preferred embodiment of the invention is recited in the claims. In order to render claim 1 obvious, Lilly must provide some teaching, suggestion or motivation for an apparatus, whose length is substantially equal to one-half of the signal transmission wavelength. Lilly fails to do so. Therefore, Lilly cannot be relied upon to render the limitations actually recited in claim 1 obvious.

Accordingly, the Applicants contend that the § 103 rejection of claims 1-9 and 24-27 cannot be upheld and request that this rejection be removed.

CONCLUSION

The response is believed to be a complete response to the issues raised in the final Office Action mailed July 7, 2007. In view of the remarks herein, Applicants assert that pending claims 1-9 and 24-27 are in condition for allowance. If the Examiner has any questions, comments or suggestions, the undersigned attorney earnestly requests a telephone conference.

No fees are required for filing this amendment; however, the Commissioner is authorized to charge any additional fees which may be required, or credit any overpayment, to Daffer McDaniel, LLP Deposit Account No. 50-3268.

Respectfully submitted,

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